

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 3, 4, 6, 11, 12-16, 18, 19, 26-30 and 41-44 are pending in the present application. Claims 1, 6, 11, 12, 16, 18, 19, 26 and 41 are amended, Claims 9, 10, 17, 20-25, and 31-33 are cancelled and Claim 44 is added by the present amendment. Claims 34-40 are previously cancelled. Claims 2, 5, 7 and 8 were previously withdrawn but are dependent on generic Claim 1. Accordingly, respectfully request that Claims 2, 5, 7 and 8 be rejoined on any allowance of Claim 1.

Claim amendments and new claims find support in the application as originally filed, for example, in the claims as originally filed and in Figs. 19 and 7A-7G. In addition support can be found in the specification at page 51, line 17 to page 52, line 4. Thus, no new matter is added.

In the outstanding Office Action, Claims 1, 3, 4, 10-13 and 26-29 were rejected under 35 U.S.C. §103(a) as unpatentable over Sato et al. (U.S. Pat. No. 6,199,505, herein "Sato") in view of Raoux et al. (U.S. Pat. No. 7,004,107, herein "Raoux"); Claims 6 and 15 were rejected under 35 U.S.C. §103(a) as unpatentable over Sato in view of Raoux in further view of Collins et al. (U.S. Pat. No. 6,252,354, herein "Collins"); Claim 14 was rejected under 35 U.S.C. §103(a) as unpatentable over Sato in view of Raoux in further view of Shan et al. (U.S. Pat. Pub. No. 2001/0009139, herein "Shan"); Claim 15 was rejected under 35 U.S.C. §103(a) as unpatentable over Sato in view of Raoux in further view of Hendricks et al. (U.S. Pat. No. 4,340,461, herein "Hendricks"); Claims 17-20 were rejected under 35 U.S.C. §103(a) as unpatentable over Sato in view of Raoux in further view of Hilliker (U.S. Pat. No. 6,631,693); Claim 30 was rejected under 35 U.S.C. §103(a) as unpatentable over Sato in view of Raoux in further view of Nakano et al. (U.S. Pat. No. 6,270,618, herein "Nakano");

and Claims 41-43 were rejected under 35 U.S.C. §103(a) as unpatentable over Sato in view of Raoux in further view of Shannon et al. (U.S. Pat. Pub. No. 2003/0192475, herein “Shannon”);

Before turning to the cited references, a brief overview of the claimed invention may be helpful. The claimed invention recites that the impedance setting section comprises an impedance change unit and a filter configured to cut a component having the fundamental frequency of the RF power. This arrangement makes it possible to reliably set the impedance against a predetermined higher harmonic without affecting the RF power.

Addressing now the rejection of Claims 1, 3, 4, 10-13 and 26-29 under 35 U.S.C. § 103a) as unpatentable over Sato and Raoux, that rejection is respectfully traversed.

Sato describes an apparatus that performs a plasma process on a substrate, however, as acknowledged by the outstanding Office Action, Sato does not describe or suggest “an impedance setting section in addition to impedance matching circuit and controller.”

The outstanding Office Action states that the proposed modification would have been obvious “to enable adjust chamber impedance during extended plasma runs in case the impedance value drifts outside a pre-set range.”¹ The record, however, fails to provide the required evidence of a motivation for a person of ordinary skill in the art to perform such modification. While the Raoux patent may provide a reason for providing a way of changing an impedance (108/110), the Raoux patent fails to suggest why a person of ordinary skill in the art would be motivated to incorporate such a feature in the apparatus such as the one disclosed in Sato.

In addition, Sato is not concerned with impedance. Sato states that its structure already achieves the goal of providing plasma processing apparatuses with which the weight

¹ See outstanding Office Action at page 4, lines 11-15.

of the apparatuses are not much increased even if the size of the substrates are increased.²

Sato does not suggest that further improvement is desired, nor that another feature should be added to further improve apparatus. In particular, Sato does not suggest to add an impedance knob, such as that disclosed in the Raoux patent.

The Sato and Raoux references, therefore, do not provide the motivation to perform the proposed modification of the Sato device. In other words, an attempt to bring in the isolated teaching of Raoux 's impedance knob into the device described in Sato would amount to improperly picking and choosing features from different references without regard to the teachings of the references as a whole.³ While the required evidence of motivation to combine need not come from the applied references themselves, the evidence must come from *somewhere* within the record.⁴ In this case, the record fails to support the proposed modification of Sato.

Further, the position that Sato can be modified to arrive at the claimed device is insufficient to establish a *prima facie* case of obviousness.⁵

Page 4, lines 5-7 of the outstanding Office Action state "Raoux et al further teach that the impedance setting section can be configured to set a previously defined value of plasma impedance (would include backward impedance also) and in case of variation the plasma impedance could be adjusted using impedance tuner 108..."

² See Sato, for example, at column 2, lines 46-50.

³ See In re Ehrreich 590 F.2d 902, 200 USPQ 504 (CCPA, 1979) (stating that patentability must be addressed "in terms of what would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the sum of all the relevant teachings in the art, not in view of first one and then another of the isolated teachings in the art," and that one "must consider the entirety of the disclosure made by the references, and avoid combining them indiscriminately.")

⁴ In re Lee, 277 F.3d 1338, 1343-4, 61 USPQ2d 1430 (Fed. Cir. 2002) ("The factual inquiry whether to combine references ... must be based on objective evidence of record. ... [The] factual question of motivation ... cannot be resolved on subjective belief and unknown authority. ... Thus, the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion").

⁵ See MPEP 2143.01 stating that the "fact that references can be combined or modified is not sufficient to establish *prima facie* obviousness"; see also same section stating "[a]lthough a prior art device 'may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so,'" (citation omitted).

However, Raoux makes no mention of backwards-direction impedance. It should be noted that, in the claimed invention, an arrangement is adopted to purposely (not by-chance) set the backward-direction impedance. This structure is been made based on findings first discovered by the inventors of the claimed invention. According to the findings, some of the characteristics of a plasma process can be suitable controlled by adjusting the backward-direction impedance input from plasma. In contrast, Raoux does not describe or suggest impedance in the backwards direction.

There is no evidence that the structure of Roaux even has the ability to set a backward-direction impedance as an impedance against an RF component including a higher harmonic of a fundamental frequency of the RF power and input from the plasma to the predetermined member. Additionally, at the time of invention Raoux would have no motivation to set this impedance since the findings of the present inventors were not yet known.

Therefore, Raoux does not describe or teach “an impedance setting section provided in addition to the matching circuit and arranged on the first interconnection, the impedance setting section being configured to set a backward-direction impedance as an impedance against an RF component including a higher harmonic of a fundamental frequency of the RF power and input from the plasma to the predetermined member, and capable of changing a value of the backward-direction impedance,” as recited in Claim 1 and similarly in Claims 12 and 26.

In addition, the further cited Collins, Shan, Hendricks, Hilliker, Nakano and Shannon references do not cure the above noted deficiencies of Sato and Roaux.

Accordingly, no combinations can be suggested from the cited references, which lead to a plasma processing apparatus including the impedance setting section according to the claimed invention.

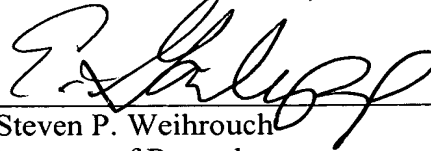
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Accordingly, it is respectfully submitted that independent Claims 1, 12 and 26 and claims depending therefrom patentably distinguish over Sato, Roaux, Rossnagel, Collins, Shan, Hendricks, Hilliker, Nakano and Shannon considered individually or in any proper combination.

Consequently, in light of the above discussion and in view of the present amendment the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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